I. INTRODUCTION

The Prince On-Board Computer is designed to work on most domestic gasoline powered vehicles. The computer requires inputs from two transducers (sensors), speed and fuel flow, in addition to six simple electrical connections.

To install the transducers and make the necessary electrical connections is not difficult. However, if you are not familiar with automobile engines and the vehicle's electrical system, you should have the unit installed by an experienced mechanic.

Each installation will be slightly different because of the many differences between vehicles. Before starting, read the instructions and examine your engine compartment.

NOTE: The POBC-A models will not work on any fuel injected or diesel vehicles.

Prince™ on-board™ computer

POBC-A	VEHICLES	SPEED TRANSDUCER LOCATION
S/C	All Vehicles With Factory Speed Control All AMC All GMC **except 1969 Delta 88 Without Speed Control** All Chrysler (1969-1976) Ford Trucks 1-Ton and Over	Speed Control Transmission Transmission
FOR-LONG #VO2586	1972-79 Ford Thunderbird, Elite, Torino, Cougar and LTD II without factory speed control	Speedometer
FOR #VO2179	Ford, Mercury and Lincoln Cars Other Than Above **except those with fuel injected engines**	Speedometer
CHR-LONG #VO2587	1977 and Newer Newport New Yorker, LeBaron, Duster, Aspen, Volare, Omni, Horizon	Speedometer
CHR #VO2178	1977 and Newer Other Than Above	Speedometer
JAP #VO2176	Toyota, Datsun Mazda and LUV Trucks 1978 and newer Japanese Vehicles. **Vehicles with a fuel return line from the carburetor are not compatible with the POBC**	Transmission

FIGURE 1

- Tools

The tools listed below are required during an average installation. In some instances other tools may be necessary.

- pliers
- wire strippers
- crimpers
- small tubing cutter
- crescent wrench
- screw driver
- voltage test light

May Need

- extension light or flashlight
- drip pan
- rags
- wheel blocks
- vehicle jack

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INSTALLATION INSTRUCTIONS

II. SPEED TRANSDUCER

The speed transducer is a small generator that is installed in the speedometer cable. The adapters included in the installation kit are for specific makes and models. Before starting any installation check the chart (Figure 1) against your vehicle and computer model number.

If your vehicle is equipped with factory installed cruise control, the speed transducer is usually installed under the hood at the speed control. Otherwise the speed transducer will be installed at the transmission or at the speedometer. In some cases you may be able to install the speed transducer at more than one location. If this happens, choose the location that is easiest and most convenient to reach.

Do not bend the speedometer cable or the extension cable any more than necessary. A sharp bend may cause noise, erratic speedometer operation, or whipping [which can break the inner flexible shaft].

Tighten speedometer fittings only with your fingers. DO NOT use pliers to tighten them.

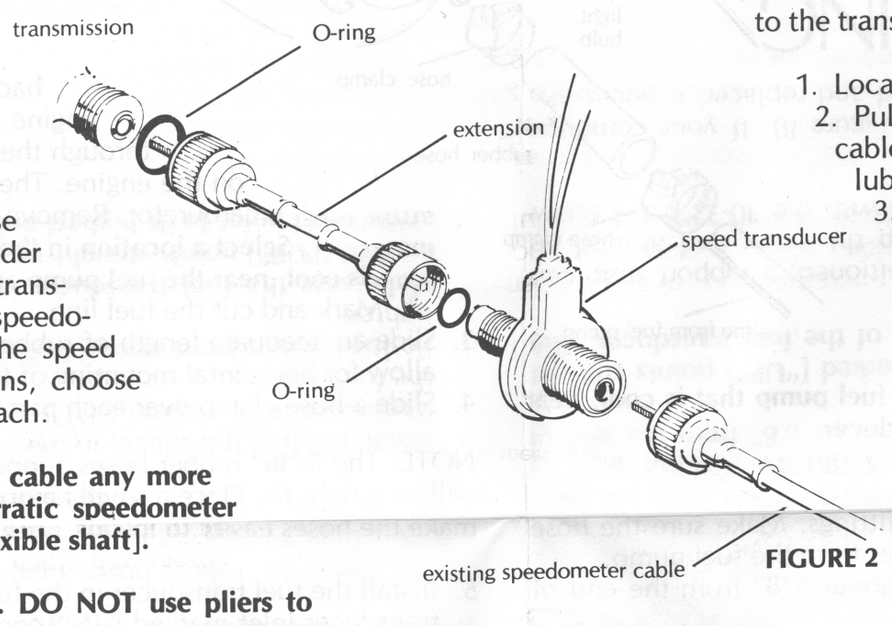

FIGURE 2

• Installation At Transmission (Figure 2)

CAUTION: If you must jack up your vehicle to connect the speed transducer to the transmission, do it **carefully**. Block the wheels and use a jack stand.

1. Locate the speed transducer and the extension cable.
2. Pull the flexible shaft out of the extension cable housing. If the cable is not greased, apply a liberal amount of speedometer cable lubricant on the flexible shaft and reinsert it in the housing.
3. Place small O-ring on the small end of the speed transducer and connect the extension cable as shown.
4. Make sure the square end of the flexible shaft enters the square hole in the speed transducer.
5. Unscrew the speedometer cable from the transmission.
6. Place the large O-ring on the transmission and connect the extension cable and speed transducer to the transmission as shown in Figure 2.
7. Connect the speedometer cable to the speed transducer so that the square cable is inserted into the square hole.
8. Check to make sure the speedometer cable has no sharp bends and DOES NOT rest on any hot or moving parts.
9. The wires will be connected later.

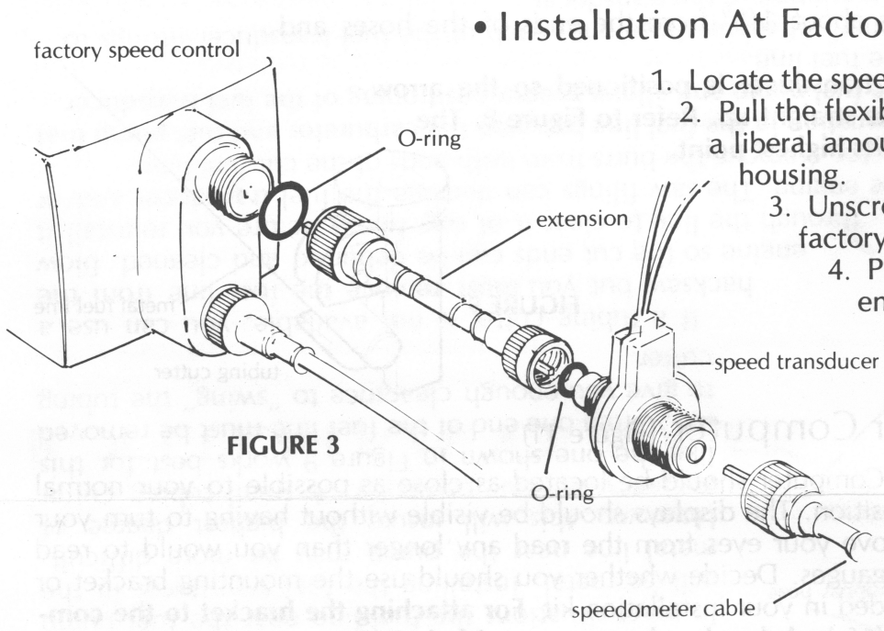

FIGURE 3

• Installation At Factory Installed Speed Control (Figure 3)

1. Locate the speed transducer and the extension cable in your package.
2. Pull the flexible shaft out of the extension cable housing. If the cable is not greased, apply a liberal amount of speedometer cable lubricant on the flexible shaft, and reinsert it in the housing.
3. Unscrew the speedometer cable from the speed control, either cable will work. Ford factory speed control looks like the speed transducer. Disconnect the cable there.
4. Place the proper size O-ring on the speed control and connect the appropriate end of the extension cable to it. Make sure the square end of the flexible shaft goes into the square hole in the speed control speedometer fitting. HAND TIGHTEN
5. Place the O-ring on the appropriate end of the speed transducer and connect the transducer to the other end of the extension cable, as shown. HAND TIGHTEN
6. Insert the square end of the speedometer cable into the square hole in the speed transducer. HAND TIGHTEN
7. Make sure there are no sharp bends in the speedometer cable and that it is not resting against hot or moving parts.
8. The wires will be connected later.

• Installation At Speedometer (Figure 4 & 5)

On Ford vehicles (1969 and newer) that do not have factory speed control and also Chrysler vehicles (1977 and newer) without factory speed control, the speed transducer **must** be installed at the speedometer. Your car make and model will determine whether your installation kit contains a long or short extension cable.

1. Locate the speed transducer, extension cable, screw-on adapter bushing and extension key. (GM installation kits will not have an adapter bushing.)
2. If the flexible cable is not greased, apply a liberal amount of speedometer cable lubricant.
3. Insert the adapter bushing key into the speed transducer, place the proper O-ring on the speed transducer and then screw the adapter bushing onto the transducer as shown.
4. Disconnect the speedometer cable at the speedometer. The speed transducer will be connected behind the instrument cluster. If your installation kit has the long extension cable, pull the speedometer cable through the fire wall.
5. Place the large O-ring on the speed transducer and connect the threaded nut of the extension cable. HAND TIGHTEN.
6. Push the free end of the extension cable onto the speedometer fitting until it snaps in place. On GM installations the extension cable screws onto the speedometer. Make sure the square end of the flexible shaft goes into the square hole in the speedometer fitting.
7. Slip the remaining O-ring onto the first groove of the adapter bushing, and push the end of the existing speedometer cable onto the bushing adapter. If the installation is on a GM vehicle, there will be no adapter bushing and the existing speedometer cable will screw directly onto the speed transducer.
8. Check to make sure the speedometer cable has no sharp bends and that it is not resting against any moving parts.
9. The wires will be connected later.

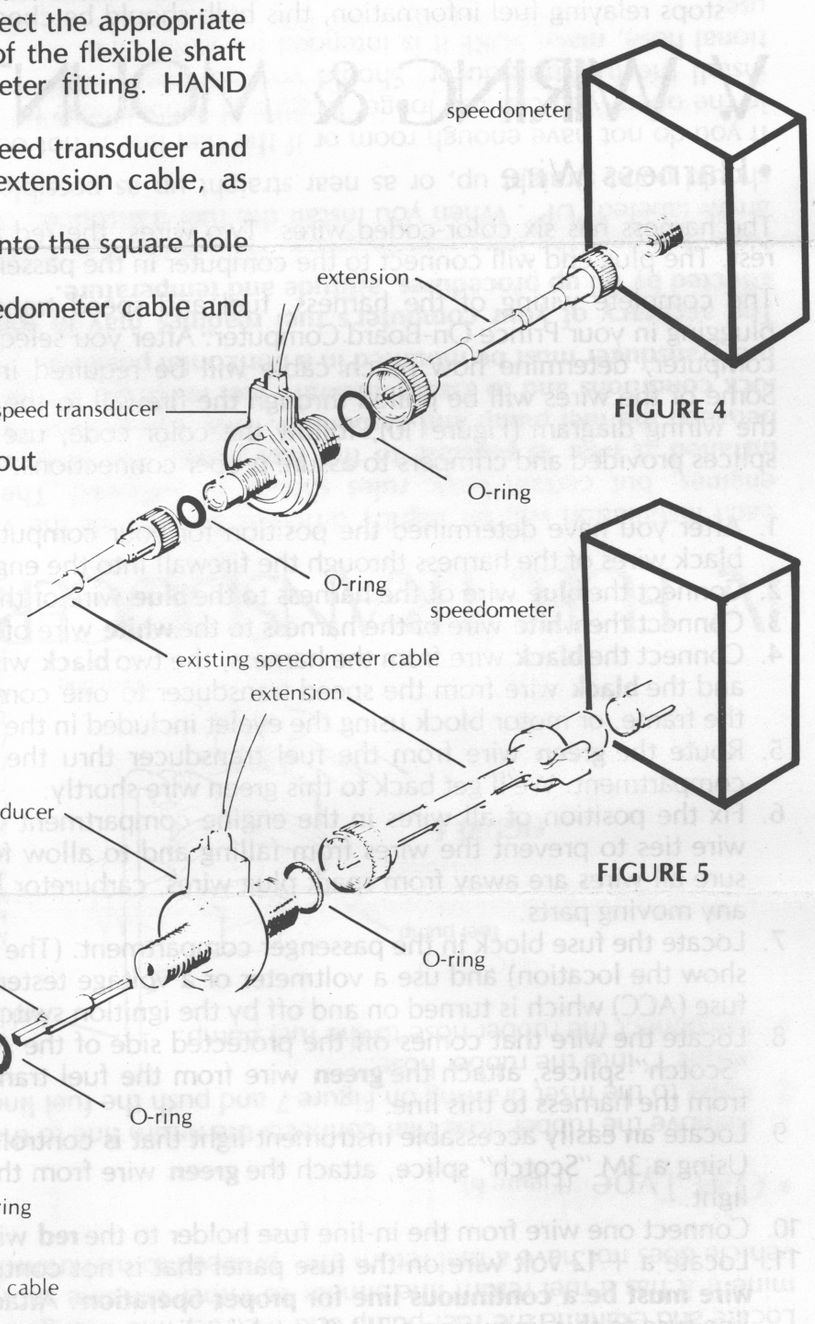

FIGURE 4

FIGURE 5

NOTE: If your vehicle presents any unusual situations or problems for installing your speed transducer, locate a speedometer shop in your area. Show them your speed transducer and these instructions. They should be able to cut and apply new ends midway in the speedometer cable that will accommodate the speed transducer.

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obc
products division
Post Office Box Six
Holland, Michigan 49423

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III. FUEL PUMP

Locate and examine the fuel pump and the fuel line that goes to the carburetor to determine if it has a fuel return line similar to either the one shown in Figure 6 or 7. If your vehicle does not have a fuel return line, proceed to fuel transducer section.

• GM Type (Figure 6)

1. Remove the rubber hose that connects the return line to the fuel pump.
2. Refer to the inset drawing on Figure 7 and push the fuel line orifice about 1" into the rubber hose.
3. Reconnect the rubber hose to the fuel pump.

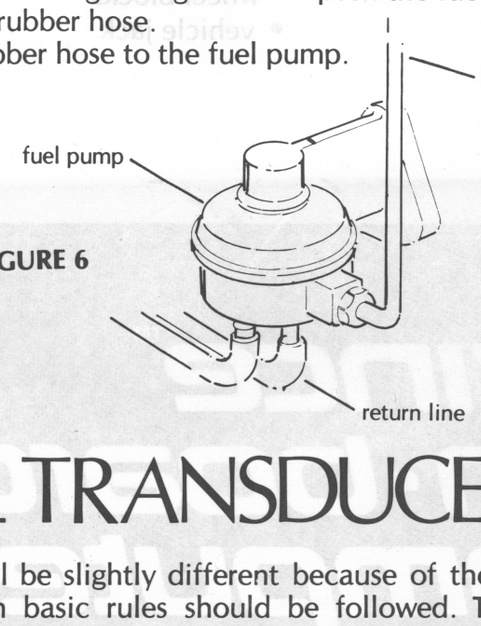

FIGURE 6

FLOWSENSOR INSTALLATION CHECKLIST

Mount flowsensor in *cool* location *low* in the engine compartment. (by fuel pump if possible)
Keep any fuel pressure regulator or fuel filter *between* flowsensor and carburetor.
Make sure fuel return lines are *between* flowsensor and fuel pump.
Keep arrow on flowsensor pointing UP!
Make sure "IN" side of flowsensor is connected to fuel line *coming from* the fuel pump.
Don't - Mount flowsensor on top of Engine!!!!
Don't - Mount flowsensor near hot engine parts or radiator hoses.
Don't - Route wiring near ignition coil, distributor or spark plug wiring!
Don't - Mount flowsensor on vertical section of fuel line!!
Don't - Mount flowsensor between gas tank and fuel pump! (installations with optional electric fuel pump excepted)
Don't - Let fuel line hose dip downwards on "out" side of flowsensor.
Remember - An improper installation will cause excessive errors in your MPG readings! Take time to do the job *right*.

• Branch Off Type (Figure 7)

NOTE: Before you cut the branch-off return line in the following steps, you will need a short length (2" - 4") of rubber hose that will slip onto the branch-off return line. A 1/4" (inside diameter) rubber hose will fit in most cases. You will also need two hose clamps to use on this hose.

1. Cut out a 1" section from the branch-off return line.
2. Push the fuel line orifice half-way into the rubber hose.
3. Slide the rubber hose and hose clamps onto the return line. Then tighten the hose clamps.

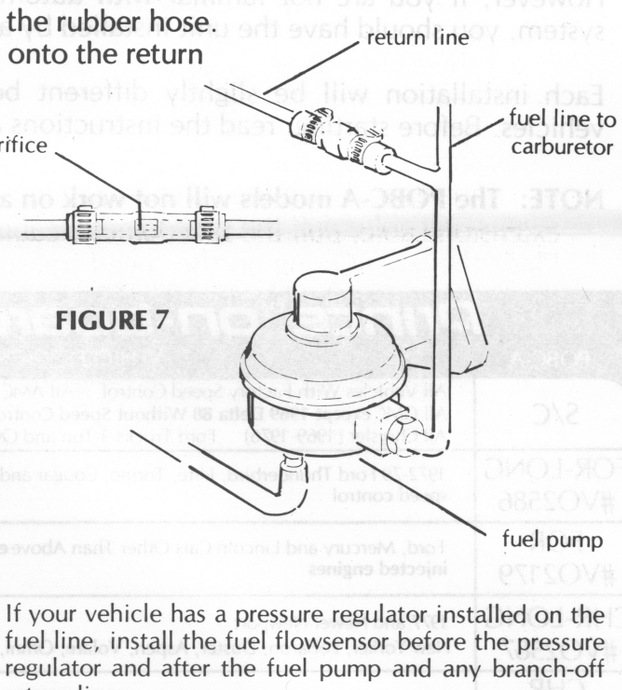

FIGURE 7

IV. FUEL TRANSDUCER

Each installation will be slightly different because of the variances between vehicles and engines, but certain basic rules should be followed. **The fuel transducer should be installed as near as possible to the fuel pump, but after any branch-off return lines between the fuel pump and carburetor. This is important to prevent possible vapor lock conditions and to assure accurate fuel readings. The inlet and outlet for the fuel transducer must be mounted in a horizontal position.**

The accuracy of your computer's fuel readings may in some instances be affected by fill up procedures, altitude and temperature.

Note that near the inlet port (marked "IN") of the fuel transducer is an arrow labeled "UP". When you install the fuel transducer, this arrow should point straight up, or as near straight up as possible.

If you do not have enough room or if the fuel line is not out in the open, you can use longer lengths of rubber hose to install the fuel transducer. Should you purchase additional hose, make SURE it is intended for FUEL LINE use.

The fuel transducer can be installed on either a rubber hose or metal fuel line. Proceed to the instructions that pertain to your type of fuel line.

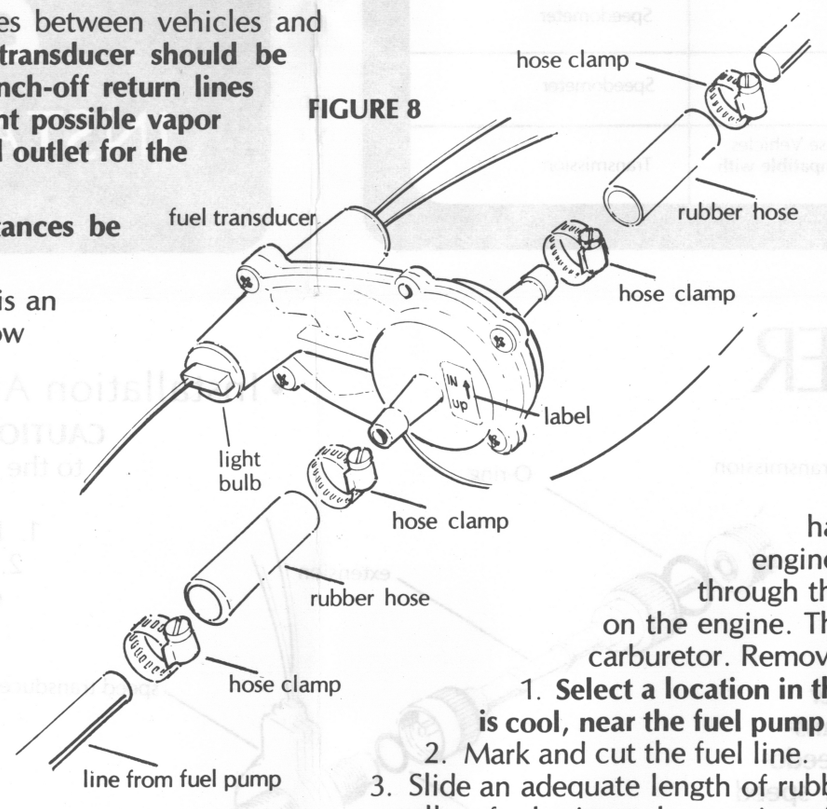

FIGURE 8

• Rubber Hose Fuel Line

1. **Select a location in the fuel line between the carburetor and fuel pump that is cool, near the fuel pump and allows proper positioning of the fuel transducer.**
2. Cut the rubber hose fuel line with a knife.
3. Slide the two clamps over the hose ends.
4. Slide the ends of the rubber hose onto the fuel transducer fittings. Make sure the hose that connects to the fuel transducer inlet (marked "IN") comes from the fuel pump.
5. Position the hose clamps over the fuel transducer fittings, about 1/8" from the end of the hoses and tighten.
6. **Make sure the fuel transducer is positioned so the arrow marked ["UP"] points straight up. Refer to Figure 8. This is necessary for proper operation of the fuel transducer. The arrow must point to its highest point.**
7. If the fuel transducer needs additional support to keep it positioned, a support strap can be fastened to the transducer with a 10-32 locknut. Wrap the other end around an existing hose or engine bracket and fasten the wrapped end with the 10-32 x 3/4 screw and locknut.

NOTE: The fuel transducer contains a GE 158 light bulb (Figure 8). If your computer stops relaying fuel information, this bulb should be checked and replaced if necessary.

• Metal Fuel Line

In most situations the fuel line near the fuel pump will be metal. Installing the fuel transducer in the metal line near the pump may be more difficult. However, this will insure the highest degree of accuracy in your computer. A small tubing cutter like the one shown in Figure 9 works best for this job. Often one end of the fuel line must be removed to give you enough clearance to "swing" the tubing cutter.

If a tubing cutter is not available, you can use a hacksaw but you **must** remove the fuel line from the engine so the cut ends can be deburred and cleaned. Blow through the line to clear it of saw filings before you reinstall it on the engine. The saw filings can damage the fuel transducer and/or carburetor. Remove the burrs from both ends of the cut fuel line.

1. **Select a location in the fuel line between the carburetor and fuel pump that is cool, near the fuel pump and allows proper positioning of the fuel transducer.**
2. Mark and cut the fuel line.
3. Slide an adequate length of rubber hose onto each of the fuel transducer fittings to allow for horizontal mounting of the transducer.
4. Slide a hose clamp over each part of the cut fuel line.

NOTE: The 5/16" rubber hoses supplied with this unit will fit over 3/8" fuel line, but it will be a tight fit. Place a small amount of lubricant on the fuel lines (not in the hoses) to make the hoses easier to install. Do not allow the lubricant to get inside the fuel line.

5. Install the fuel transducer in the fuel line. Make sure that the hose at the fuel transducer inlet marked ("IN") connects to the fuel line that comes from the fuel pump.
6. Position the clamps about 1/8" from the ends of the hoses and tighten.
7. **Make sure the fuel transducer is positioned so the arrow marked ["UP"] points straight up. Refer to Figure 8. The arrow must point to its highest point.**

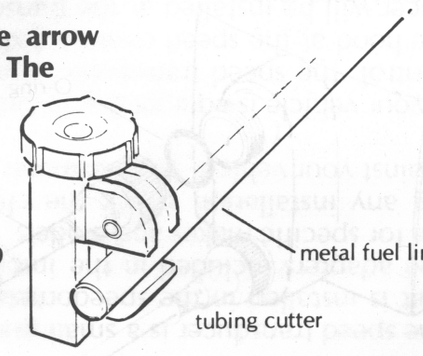

FIGURE 9

V. WIRING & MOUNTING

• Harness Wire

The harness has six color-coded wires. Two wires, the red and black, are longer than the rest. The plug end will connect to the computer in the passenger compartment.

The complete wiring of the harness, fuel and speed transducer should be done before plugging in your Prince On-Board Computer. After you select the position for mounting the computer, determine how much cable will be required in the passenger compartment. Some of the wires will be pulled through the firewall to the engine compartment. Refer to the wiring diagram (Figure 10), follow the color code, use the butt splices and "Scotch" splices provided and crimpers to assure proper connections.

1. After you have determined the position for your computer, pull the blue, white and black wires of the harness through the firewall into the engine compartment.
2. Connect the **blue** wire of the harness to the **blue** wire of the fuel transducer.
3. Connect the **white** wire of the harness to the **white** wire of the speed transducer.
4. Connect the **black** wire from the harness, the two **black** wires from the fuel transducer, and the **black** wire from the speed transducer to one common ground connection on the frame, or motor block using the eyelet included in the installation kit.
5. Route the **green** wire from the fuel transducer thru the firewall into the passenger compartment. We'll get back to this green wire shortly.
6. Fix the position of all wires in the engine compartment with black electrical tape or wire ties to prevent the wires from falling and to allow for a neat installation. Make sure all wires are away from spark plug wires, carburetor linkages, the motor block or any moving parts.
7. Locate the fuse block in the passenger compartment. (The vehicle owner's manual will show the location) and use a voltmeter or a voltage tester to locate an accessory line fuse (ACC) which is turned on and off by the ignition switch.
8. Locate the wire that comes off the protected side of the ACC line fuse. Using two 3M "Scotch" splices, attach the **green** wire from the fuel transducer and the **orange** wire from the harness to this line.
9. Locate an easily accessable instrument light that is controlled by the headlight switch. Using a 3M "Scotch" splice, attach the **green** wire from the harness to the instrument light.
10. Connect one wire from the in-line fuse holder to the **red** wire from the harness.
11. Locate a + 12 volt wire on the fuse panel that is not controlled by any switches. **This wire must be a continuous line for proper operation**. Attach the **red** wire with the in-line fuse to this line using a 3M "Scotch" splice.
12. Make sure the ignition key is off. Connect the harness plug to the computer connector. Apply enough pressure to lock the connector.

This completes the wiring. . . . .

• Mounting Your Computer (Figure 11)

Your Prince On-Board Computer should be located as close as possible to your normal reach from a seated position. The displays should be visible without having to turn your head or otherwise remove your eyes from the road any longer than you would to read your instrument panel gauges. Decide whether you should use the mounting bracket or double back tape included in your installation kit. **For attaching the bracket to the computer, use ONLY the 5/16 inch hex head screws provided.** Before mounting your computer, check to see if it works properly, then finish hiding your wires, and completing your installation.

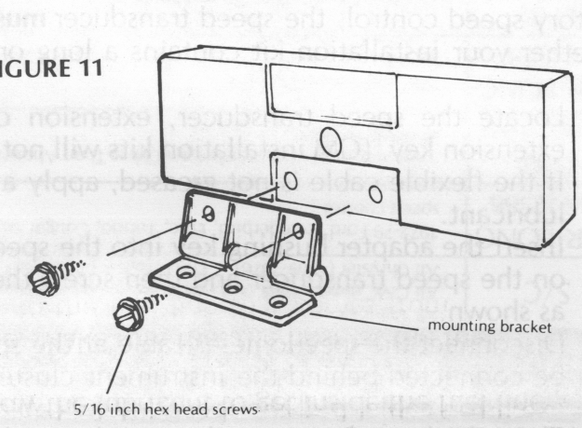

FIGURE 11

FIGURE 10